

APPENDIX C

UTILITIES

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

7SFG(A)	7th Special Forces Group (Airborne)
96 CEG/CEVC	96 th Civil Engineer Group, Environmental Compliance Branch
AFB	Air Force Base
AWWA	American Water Works Association
gpd	Gallons per Day
IJTS	Initial Joint Training Site
JSF	Joint Strike Fighter
USEPA	U.S. Environmental Protection Agency

UTILITIES

CALCULATIONS USED TO ESTIMATE POTABLE WATER USE AND WASTEWATER

Potable Water

Estimates of potable water use are based on the number of personnel expected to be affiliated with the Joint Strike Fighter (JSF) Initial Joint Training Site (IJTS). The number of personnel is multiplied by coefficients that represent the gallons consumed on average and at a maximum per person per day at Eglin Air Force Base (AFB). The coefficients are based on actual and projected consumption and population estimates for Eglin AFB and were derived by the Eglin Environmental Compliance office (96 CEG/CEVC).

The coefficients may overestimate the number of gallons expected to be consumed. However, the potable water estimates are based solely on the number of personnel. They do not incorporate water use by equipment or industrial processes, such as the two freshwater rinses and aircraft wash rack proposed for the JSF aircraft. The reason for this is industrial water use has not been quantified enough to develop a valid coefficient. By using the higher multiplier, the various industrial uses of water are accounted for in initial analysis, providing more flexibility later in the planning process.

Potable water estimates:

Number of personnel \times coefficient = gallons per day (gpd)

Average maximum per capita use: coefficient = 231 gallons/person/day

No Action Alternative and Alternatives 1A and 1I:

2,481 (number of JSF IJTS personnel) \times 231 gallons = 572,785 gpd

Alternatives 2A, 2B, 2C, 2D, and 2E:

1,203 (number of JSF IJTS personnel located at Eglin Main Base) \times 231 gallons
= 277,735 gpd

1,278 (number of JSF IJTS personnel located at Duke Field) \times 231 gallons
= 295,050 gpd

Wastewater

A combination of methods outlined in the U.S. Environmental Protection Agency's (USEPA) *Onsite Wastewater Treatment Systems Manual* (USEPA, 2002) and the American Water Works Association (AWWA, 2006) website were used to estimate wastewater rates for the JSF IJTS and the 7th Special Forces Group (Airborne) (7SFG[A]). Wastewater estimates can be based on either number of personnel inhabiting certain predefined facilities or the square footage of structures.

The *Onsite Wastewater Treatment Systems Manual* (USEPA, 2002) categorizes facilities and estimates typical wastewater flow rates per unit. For example, an office has a typical wastewater flow rate of 13 gallons per employee per day. However, a dining hall measures typical wastewater flow rates per meal served based on a figure of 7 gallons per meal per day.

After estimating wastewater flow rates for each facility, each amount was added to calculate the total wastewater flow rates expected from the JSF IJTS. Square footage was used as the basis for estimating typical wastewater flow rates when the type of facility was not included in the USEPA's report or when the number of units could not be accurately estimated.

Examples of estimating flow rate by facility:

Wastewater flow rates for JSF IJTS personnel working on a daily basis under the No Action Alternative and Alternatives 1A and 1I:

$2,481 \text{ (number of personnel)} \times 13 \text{ gallons/person/day in office or industrial facility} = 32,253 \text{ gpd.}$

(Note: the typical flow rate for industrial facilities accounts for sanitary waste only and does not include wastewater produced by industrial processes.)

Wastewater flow rates for JSF IJTS personnel living in the dormitories on a daily basis:

$732 \text{ pilot and maintainer students} \times 40 \text{ gallons/person/day} = 29,280 \text{ gpd}$

REFERENCES

American Water Works Association (AWWA), 2006. Industrial, Commercial and Irrigation Demand and Contribution to Wastewater Flow. Retrieved from <http://www.awwa.org/waterwiser/watch/index.cfm?ArticleID=210>, on 29 August 2006.

U.S. Environmental Protection Agency (USEPA), 2002. *Onsite Wastewater Treatment Systems Manual* (EPA/625/R-00/008). Office of Water, Office of Research and Development. February 2002.